



San Joaquin Tributary Association

- Modesto Irrigation District
- Turlock Irrigation District
- South San Joaquin Irrigation District

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May 17, 2007

Mr. Paul Hann
Central Valley Regional Water Quality Control Board
11020 Sun Center Drive #200
Rancho Cordova, CA 95670-6114

Re: Methodology for Derivation of Pesticide Water Quality Criteria for the Protection of Aquatic Life in the Sacramento and San Joaquin River Basins - Phase II, Methodology Development and Derivation of Chlorpyrifos Criteria

Dear Mr. Hann

Thank you for the opportunity to provide comments on the draft methodology for derivation of pesticide water quality criteria. Overall, the proposed methodology appears to be sound and well documented but we do have some significant concerns about specific components of the methodology. As stated by the Board during the workshop on April 18, although the criteria derived using this methodology would not be regulatory values themselves, the criteria could be adopted as regulatory water quality objectives, or could be utilized as “best available information” to evaluate compliance with narrative objectives. Hence, adoption of the proposed methodology, and the eminent regulatory water quality objectives that would follow, would have significant negative implications for numerous dischargers and water management agencies within the Central Valley.

The San Joaquin Tributaries Association (SJTA) includes five irrigation districts located on the east side of the San Joaquin Valley. The member agencies consist of the Merced Irrigation District, the Turlock Irrigation District, the Modesto Irrigation District, the Oakdale Irrigation District and the South San Joaquin Irrigation District. These five irrigation districts hold the majority of the water rights on the Merced, Tuolumne and Stanislaus Rivers and provide excellent quality water arising from snowmelt runoff from the west slope of the Sierra Nevada Mountains. These districts provide water for a variety of reasonable and beneficial public purposes, including, instream flows, agricultural irrigation use, domestic potable use, recreation, wildlife habitat, municipal and industrial use, and hydroelectric power generation. Combined, the five irrigation districts deliver water to approximately 600,000 acres of prime agricultural land of State importance.

As a result of the potential impacts, the SJTA member agencies have conducted a thorough review of the proposed methodology. The following comments are submitted for your consideration:

General Comments:

1. Overall, the proposed methodology appears to be sound and well documented. The authors provided a thorough response to previous Regional Board and peer review comments, and revised the approach and documentation when deemed appropriate.
2. The main concern we have with the methodology outlined in this document is use of an alternate approach (the "assessment factor method") to develop criteria when limited data are available. Theoretically, this could result in adoption of a criterion when only one study result (for one species) is available. Due to the high level of uncertainty associated with this approach, it could either lead to significant underprotection or overprotection of the aquatic life community. Since the "assessment factors" increase with uncertainty, this method may result in an extremely low criterion value that is impractical and unwarranted. We question whether it is productive to attempt to develop criteria for those pesticides with limited relevant, high quality toxicity data. Adopting any criterion with only one study result is not scientifically sound and will likely have no validity in the scientific community. While it may be appropriate to identify a screening threshold when only limited data are available, it would be misleading to attempt to develop a criterion that is supposed to be protective of the aquatic life community. In such cases, the effort might be better spent in conducting site-specific toxicity tests with resident species. In any case, the existing narrative toxicity objective in the Basin Plan could be used until sufficient data are available to develop a well-documented criterion.

Specific Comments:

1. The proposed methodology includes an allowable frequency of exceedance of once every 3 years for both the acute and chronic objectives. This is the same as the frequency of exceedance allowed for in the USEPA 1985 guidance, and the authors of the new methodology present good rationale for using this approach, given the limited supporting data available on ecosystem recovery after pulse disturbances. However, rather than requiring this frequency of exceedance to be applied in all cases, it would be reasonable to allow flexibility in the frequency of exceedance on a case-by-case basis, if sufficient data are available for specific pesticides. Although adequate relevant data are unlikely to be available in the near future, the proposed methodology should allow for consideration of new data that become available. There should also be flexibility to specify how exceedances could occur, in terms of duration and magnitude of exceedance. During the workshop on April 18, 2007, Regional Board staff stated that the guidance did allow for flexibility in the frequency of exceedance if data becomes available. Section 3-7.0 states that "These averaging periods may be modified if data and/or models become available that can scientifically defend altering them". However, as currently written it is not clear

whether the frequency of exceedance period could be modified – this should be made explicit.

2. Section 2-3.6.2 (Bioaccumulation/secondary poisoning, p. 2-73) contains contradictory statements. The first sentence states “This methodology is concerned with setting water quality criteria for the protection of aquatic life, thus it is not directly concerned with the protection of terrestrial wildlife or human health.” The third paragraph states that if a chemical is determined to have bioaccumulative potential, and dietary or FDA action levels are available, an additional analysis must be conducted and the criteria may need to be adjusted to ensure protection of wildlife/human health.

While it is important to consider bioaccumulative effects for protection of both wildlife and human health, this should be done as a separate and parallel process and a separate set of values should be developed based on protection of these receptors. Keeping the process separate will have multiple benefits, including:

- Better transparency in how criteria are developed; it will be clear which values are protective of aquatic life, which are protective of wildlife, and which are protective of human health. The lowest values can be applied as appropriate.
- Ease of use by risk assessors to determine which receptor groups are most at risk at specific locations, without having to go back to the derivation of the values
- Ease of use in determining which values are applicable to specific water bodies, based on beneficial uses

Many bioaccumulative compounds have been demonstrated to enter the food web primarily through a benthic (sediment pathway) rather than through a water column pathway. For those pesticides that are hydrophobic and likely to reside primarily in the sediments, food web effects might be better addressed through sediment quality objectives, which the Regional Board is also planning to develop. Note also that the proposed criteria are based on toxicity where the only mode of accumulation is via direct absorption from water (no dietary intake). This is not consistent with the food web effects that involve dietary uptake. Therefore, the proposed criteria should address “direct” toxicity to aquatic organisms, and not the “indirect” toxic effects due to food web biomagnification.

3. Section 2-3.1.1: For the specific data sets analyzed in the report, Burr Type III distribution appears to be a good choice. However, one should not automatically assume this distribution for new data sets. Based on the results for the data sets in the report, one may define the null hypothesis to be that a new data set follows the Burr Type III distribution. That is, give the benefit of doubt to the Burr Type III distribution. But this hypothesis should be tested against the new data. If the data conclusively show that the null hypothesis should be rejected, then a search for a more appropriate distribution would be appropriate.

4. The significance level (p value) for the Burr Type III distribution did not appear to be listed in any of the tables or figures. The p value for lognormal distribution is shown in Figure 2.1. Even when Table 2.3 shows that the fit number is better (lower) for Burr III than for lognormal, that does not necessarily mean that Burr III is a good choice. For example, Table 2.3 shows that, for Endrin, Burr III is better than Lognormal. However, Figure 2.1 shows the p value for lognormal to be 0.001. Thus, even though better than lognormal, Burr III may still be rejected based on p value.
5. The standard approach proposed requires less toxicity data than the USEPA approach (acceptable data on 5 taxa as compared to 8 taxa). However, the reasons they give for this do seem reasonable and justified (page 2-16). Our concern is related to the alternate “assessment factor” approach recommended when data on less than 5 taxa are available (see General Comment #2).
6. Table 3-15 specifies the assessment factors to apply when data sets include fewer than 5 values. What about the case when there are more than five values, but they do not cover the 5 types of organisms necessary to apply the SSD method (specified on page 3-8)? Theoretically, there could be 20 data points covering only 4 or less of the 5 organism categories – what is to be done in that case?
7. Values reported as > or < are excluded from the data set. Excluding censored data from a data set could introduce a significant bias in the results. There are statistical methods available to analyze censored data. Because the new proposed guidelines rule out more data than the USEPA method, this can have a substantial effect on the value of the criteria derived, as documented in the case of chlorpyrifos.

We hope that the Regional Board will give these comments careful attention, and will reconsider use of the “assessment factor method” to develop water quality criteria when insufficient data are available. If you have any questions regarding these comments or would like further clarification, please feel free to contact Lisa Hunt of URS Corporation, at (510)874-1795 or lisa_hunt@urscorp.com.

Respectfully submitted,



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